What is claimed is:

1. A fuel cell system comprising:

a fuel cell comprising at least one variable volume chamber;

a cartridge comprising at least one variable volume chamber; and

a valve system which regulates or controls fluid flow between the cartridge and fuel cell and vice versa.

2. The system of claim 1, wherein the at least one variable volume chamber of the fuel cell comprises a flexible fuel chamber.

3. The system of claim 1, further comprising an electrolyte chamber having a defined volume.

4. The system of claim 1, further comprising an electrolyte chamber.

5. The system of claim 1, wherein the at least one variable volume chamber of the cartridge comprises a flexible fuel chamber.

6. The system of claim 1, wherein the at least one variable volume chamber of the cartridge comprises a flexible fuel chamber and a flexible electrolyte chamber.

7. The system of claim 1, wherein the at least one variable volume chamber of the fuel cell comprises a flexible wall having folds.

8. The system of claim 1, wherein the at least one variable volume chamber of the cartridge comprises a flexible wall having folds.

9. The system of claim 1, wherein the at least one variable volume chamber of the fuel cell comprises a flexible expandable and contractable chamber.

10. The system of claim 1, wherein the at least one variable volume chamber of the cartridge comprises a flexible expandable and contractable chamber.

11. The system of claim 1, wherein the cartridge is removably connected to the fuel cell.

12. The system of claim 11, wherein the cartridge is removably connected to the fuel cell by a sliding connection.

13. The system of claim 11, wherein the cartridge is removably connected to the fuel cell by a sliding cradle connection.

14. The system of claim 11, wherein the cartridge is removably connected to the fuel cell by an abutting connection.

15. The system of claim 11, wherein the cartridge is removably connected to the fuel cell by a rotational sliding connection.

16. The system of claim 1, wherein the fuel cell further comprises a front cover, a rear cover, a mounting frame, an anode assembly, a cathode assembly, a cathode protection device, and a frame rim.

17. The system of claim 16, wherein the at least one variable volume chamber of the fuel cell comprises a flexible wall having folds and a peripheral rim secured to the anode assembly.

18. The system of claim 16, wherein the cathode protection device comprises a cathode protection net.

19. The system of claim 16, wherein the anode assembly and the cathode assembly are mounted to the mounting frame and wherein a volume defined by the mounting frame, the anode assembly and the cathode assembly forms an electrolyte chamber.

20. The system of claim 16, wherein the at least one variable volume chamber of the fuel cell comprises a flexible wall having folds and a peripheral rim secured to the anode assembly and wherein a volume defined by the flexible wall and the anode assembly forms the at least one variable volume chamber of the fuel cell.

21. The system of claim 1, wherein the cartridge further comprises a front cover and a rear cover.

22. The system of claim 21, wherein the at least one variable volume chamber of the cartridge is disposed between the front cover and the rear cover.

23. The system of claim 1, wherein the at least one variable volume chamber of the cartridge comprises a backing and a flexible wall having folds and a peripheral portion secured to the backing.

24. The system of claim 23, wherein the backing comprises a plate.

25. The system of claim 1, wherein the at least one variable volume chamber of the cartridge comprises a variable volume fuel chamber and a variable volume electrolyte chamber, and further comprising fuel arranged within the

variable volume fuel chamber and electrolyte arranged within the variable volume electrolyte chamber.

26. The system of claim 1, wherein the at least one variable volume chamber of the fuel cell comprises a variable volume fuel chamber, and wherein the fuel cell further comprises an electrolyte chamber, fuel arranged within the variable volume fuel chamber, and electrolyte arranged within the electrolyte chamber.

27. The system of claim 1, wherein the valve system comprises a first part which is coupled to and/or associated with the fuel cell and a second part which is coupled to and/or associated with the cartridge.

28. The system of claim 27, wherein the second part is insertable into the first part.

29. The system of claim 27, wherein the second part is releasably connectable to the first part.

30. The system of claim 27, wherein, when the second part is disconnected from the first part, the first part prevents fluid from exiting out of the fuel cell and the second part prevents fluid from exiting out of the cartridge.

31. The system of claim 27, wherein, when the second part is disconnected from the first part, the first part prevents fluid from leaking out of the fuel cell and the second part prevents fluid from leaking out of the cartridge.

32. The system of claim 1, wherein the valve system comprises a closed position and an opened position.

33. The system of claim 1, wherein the valve system comprises a plurality of exit ports which are in fluid communication with the fuel cell.

34. The system of claim 1, wherein the fuel cell and cartridge each comprise a generally rectangular shape.

35. A method of assembling a cartridge to a fuel cell, the method comprising:

connecting a cartridge comprising at least one variable volume chamber to a fuel cell comprising at least one variable volume chamber; and

transferring fluid from the cartridge to the fuel cell.

36. The method of claim 35, wherein the transferring comprises regulating or controlling fluid flow between the cartridge and fuel cell.

37. The method of claim 35, wherein the transferring comprises regulating or controlling fluid flow between the cartridge and fuel cell and vice versa.

38. The method of claim 35, further comprising transferring spent fluid between the fuel cell and the cartridge.

39. The method of claim 35, further comprising controlling fluid flow between the cartridge and the fuel cell via a valve system.

40. The method of claim 35, further comprising controlling fluid flow between the fuel cell and the cartridge via a valve system.

41. The method of claim 35, wherein the transferring comprises compressing the least one variable volume chamber of the cartridge to cause the fluid to enter into the fuel cell.

42. The method of claim 41, wherein the fluid comprises fuel and electrolyte.

43. The method of claim 35, wherein the transferring comprises forcing the fluid to enter into the at least one variable volume chamber of the fuel cell from the at least one variable volume chamber of the cartridge.

44. The method of claim 35, wherein the at least one variable volume chamber of the fuel cell comprises a flexible wall with folds.

45. The method of claim 35, wherein the at least one variable volume chamber of the cartridge comprises a flexible wall with folds.

46. The method of claim 35, wherein the at least one variable volume chamber of the fuel cell comprises a flexible expandable and contractable chamber.

47. The method of claim 35, wherein the at least one variable volume chamber of the cartridge comprises a flexible expandable and contractable chamber.

48. The method of claim 35, further comprising, before the transferring, coupling a valve of the cartridge to a valve of the fuel cell.

49. The method of claim 48, further comprising, before the transferring, causing each valve to open from a closed position to allow fluid communication between the cartridge and the fuel cell.

50. The method of claim 35, further comprising controlling fluid flow between the cartridge and the fuel cell and vice versa with a valve arrangement.

51. The method of claim 35, further comprising, before the transferring, securely attaching a male valve portion on the cartridge to a female valve portion on the fuel cell.

52. The method of claim 35, further comprising, after the transferring, transferring spent fluid from the fuel cell to the cartridge and disconnecting the cartridge from the fuel cell.

53. The method of claim 52, further comprising, after the disconnecting, connecting a new cartridge to the fuel cell.

54. A cartridge for refilling a fuel cell, the cartridge comprising:

a main container;

at least one variable volume fuel chamber and at least one variable volume electrolyte chamber arranged within the main container; and

a valve that communicates with the at least one variable volume fuel and electrolyte chambers.

55. The cartridge of claim 54, wherein the main container comprises a rear cover and a front cover.

56. The cartridge of claim 54, wherein the at least one variable volume fuel chamber comprises an flexible material wall that is at least one of expandable and compressible and inflatable and deflatable.

57. The cartridge of claim 54, wherein the at least one variable volume electrolyte chamber comprises an flexible material wall that is at least one of expandable and compressible and inflatable and deflatable.

58. The cartridge of claim 54, wherein the at least one variable volume fuel chamber is defined by an inflatable and/or expandable flexible material wall and a rigid plate.

59. The cartridge of claim 58, wherein the at least one variable volume electrolyte chamber is defined by another inflatable and/or expandable flexible material wall and the rigid plate.

60. The cartridge of claim 54, wherein the at least one variable volume electrolyte chamber is defined by an inflatable and/or expandable flexible material wall and a rigid plate.

61. The cartridge of claim 54, wherein the at least one variable volume fuel chamber comprises a flexible material wall with folds.

62. The cartridge of claim 54, wherein the at least one variable volume electrolyte chamber comprises a flexible material wall with folds.

63. The cartridge of claim 54, wherein the main container completely surrounds and contains the at least one variable volume fuel chamber and the at least one variable volume electrolyte chamber.

64. The cartridge of claim 54, wherein the at least one variable volume fuel chamber and the at least one variable volume electrolyte chamber are separated from each other.

65. The cartridge of claim 54, further comprising fuel arranged within the at least one variable volume fuel chamber and electrolyte arranged within the at least one variable volume electrolyte chamber.

66. The cartridge of claim 54, wherein the valve is adapted to prevent fuel and electrolyte from exiting the at least one variable volume fuel chamber and the at least one variable volume electrolyte chamber when the cartridge is separated from the fuel cell, and wherein the valve is adapted to allow fuel and electrolyte to exit from the at least one variable volume fuel chamber and the at least one variable volume electrolyte chamber when the cartridge is connected to the fuel cell.

67. The cartridge of claim 54, wherein the valve is adapted to prevent fuel and electrolyte from exiting the at least one variable volume fuel chamber and the at least one variable volume electrolyte chamber when the valve is disconnected from a valve of the fuel cell, and wherein the valve is adapted to allow fuel and electrolyte to exit from the at least one variable volume fuel chamber and the at least one variable volume electrolyte chamber when the valve of the cartridge is connected to the valve of the fuel cell.

68. The cartridge of claim 54, wherein the valve is adapted to connect to and disconnect from a valve of the fuel cell.

69. The cartridge of claim 54, wherein the valve comprises a closed position and an opened position.

70. The cartridge of claim 54, wherein the valve comprises a plurality of exit ports which are adapted for fluid communication with the fuel cell.

71. The cartridge of claim 54, further comprising a securing cap that is removably secured to the valve.

72. A fuel cell adapted to connect to a cartridge, the fuel cell comprising:

an outer shell;

at least one variable volume fuel chamber and at least one electrolyte chamber arranged within the outer shell;

an anode arranged within the outer shell;

a cathode arranged within the outer shell; and

a valve that communicates with the at least one variable volume fuel and electrolyte chambers.

73. The fuel cell of claim 72, wherein the outer shell comprises a rear cover and a front cover.

74. The fuel cell of claim 72, wherein the at least one variable volume fuel chamber comprises an flexible material wall that is at least one of expandable and compressible and inflatable and deflatable.

75. The fuel cell of claim 72, wherein the at least one electrolyte chamber comprises a defined volume chamber.

76. The fuel cell of claim 72, wherein the at least one variable volume fuel chamber is defined by an inflatable and/or expandable flexible material wall and a rigid plate member.

77. The fuel cell of claim 76, wherein the rigid plate member comprises the anode.

78. The fuel cell of claim 72, wherein the at least one electrolyte chamber is defined by the cathode.

79. The fuel cell of claim 78, wherein the at least one electrolyte chamber is defined by the cathode and a frame member.

80. The fuel cell of claim 72, wherein the at least one variable volume fuel chamber comprises a flexible material wall with folds.

81. The fuel cell of claim 72, further comprising a frame member supporting the anode and the cathode.

82. The fuel cell of claim 72, wherein the outer shell completely surrounds and contains the at least one variable volume fuel chamber and the at least one electrolyte chamber.

83. The fuel cell of claim 72, wherein the at least one variable volume fuel chamber and the at least one electrolyte chamber are separated from each other.

84. The fuel cell of claim 72, further comprising fuel arranged within the at least one variable volume fuel chamber and electrolyte arranged within the at least one electrolyte chamber.

85. The fuel cell of claim 72, wherein the valve is adapted to prevent fuel and electrolyte from exiting the at least one variable volume fuel chamber and the at least one electrolyte chamber when the fuel cell is separated from a cartridge,

and wherein the valve is adapted to allow fuel and electrolyte to exit from the at least one variable volume fuel chamber and the at least one electrolyte chamber when the cartridge is connected to the fuel cell.

86. The fuel cell of claim 72, wherein the valve is adapted to prevent fuel and electrolyte from exiting the at least one variable volume fuel chamber and the at least one electrolyte chamber when the valve is disconnected from a valve of the cartridge, and wherein the valve is adapted to allow fuel and electrolyte to exit from the at least one variable volume fuel chamber and the at least one electrolyte chamber when the valve of the cartridge is connected to the valve of the fuel cell.

87. The fuel cell of claim 72, wherein the valve is adapted to connect to and disconnect from a valve of the cartridge.

88. The fuel cell of claim 72, wherein the valve comprises a closed position and an opened position.

89. The fuel cell of claim 72, wherein the valve comprises a plurality of exit ports which are adapted for fluid communication with the cartridge.

90. The fuel cell of claim 72, further comprising a securing cap that is removably secured to the valve.

91. A fuel cell and cartridge system, the system comprising:

a fuel cell comprising, an anode, a cathode, at least one variable volume fuel chamber, at least one electrolyte chamber, and a first valve which regulates or controls fluid flow; and

a cartridge comprising at least one variable volume fuel chamber, at least one variable volume electrolyte chamber, and a second valve which regulates or controls fluid flow,

wherein the second valve is removably connectable to the first valve.

92. The system of claim 91, wherein the fuel cell comprises an outer shell having a rear cover and a front cover.

93. The system of claim 91, wherein each at least one variable volume fuel chamber comprises an flexible material wall that is at least one of expandable and compressible and inflatable and deflatable.

94. The system of claim 91, wherein the at least one electrolyte chamber of the fuel cell comprises a defined volume chamber.

95. The system of claim 91, wherein each at least one variable volume fuel chamber is defined by an inflatable and/or expandable flexible material wall and a rigid plate member.

96. The system of claim 91, wherein the at least one electrolyte chamber of the fuel cell is defined by the cathode and a frame member.

97. The system of claim 91, wherein each at least one variable volume fuel chamber comprises a flexible material wall with folds.

98. The system of claim 91, further comprising a frame member supporting the anode and the cathode of the fuel cell.

99. The system of claim 91, wherein the fuel cell further comprises an outer shell that completely surrounds and contains the at least one variable volume fuel chamber and the at least one electrolyte chamber.

100. The system of claim 91, wherein the cartridge further comprises a main container that completely surrounds and contains the at least one variable volume fuel chamber and the at least one variable volume electrolyte chamber.

101. The system of claim 91, wherein the at least one variable volume fuel chamber and the at least one electrolyte chamber of the fuel cell are separated from each other, and wherein the at least one variable volume fuel chamber and the at least one variable volume electrolyte chamber of the cartridge are separated from each other.

102. The system of claim 91, further comprising fuel arranged within the at least one variable volume fuel chamber and electrolyte arranged within the at least one electrolyte chamber of the fuel cell.

103. The system of claim 91, further comprising fuel arranged within the at least one variable volume fuel chamber and electrolyte arranged within the at least one variable volume electrolyte chamber of the cartridge.

104. The system of claim 91, wherein the first valve is adapted to prevent fuel and electrolyte from exiting the at least one variable volume fuel chamber and the at least one electrolyte chamber when the fuel cell is separated from the cartridge, and wherein the second valve is adapted to allow fuel and electrolyte to exit from the at least one variable volume fuel chamber and the at least one variable volume electrolyte chamber of the cartridge when the cartridge is connected to the fuel cell.

105. The system of claim 91, wherein the first valve is adapted to prevent fuel and electrolyte from exiting the at least one variable volume fuel chamber and the at least one electrolyte chamber when the first valve is disconnected from the second valve of the cartridge, and wherein the first valve is adapted to allow fuel and electrolyte to exit from the at least one variable volume fuel chamber and the at least one electrolyte chamber when the second valve of the cartridge is connected to the first valve of the fuel cell.

106. The system of claim 91, wherein the first valve of the fuel cell is adapted to connect to and disconnect from the second valve of the cartridge.

107. The system of claim 91, wherein each of the first and second valves comprises a closed position and an opened position.

108. The system of claim 91, wherein each of the first and second valves comprise a plurality of exit ports which are adapted for fluid flow.

109. The system of claim 91, further comprising a first securing cap that is removably secured to the first valve and a second securing cap that is removably secured to the second valve.

110. The system of claim 91, wherein the first valve is securely and sealingly connected to second valve.

111. A method of refilling a fuel cell using the system of claim 91, the method comprising:

connecting the second valve of the cartridge to the first valve of the fuel cell;

forcing fuel to enter into the at least one variable volume fuel chamber of the fuel cell from the at least one variable volume fuel chamber of the cartridge; and

forcing electrolyte to enter into the at least one electrolyte chamber of the fuel cell from the at least one variable volume electrolyte chamber of the cartridge.

112. The method of claim 111, wherein each forcing comprises compressing the at least one variable volume fuel chamber and the at least one variable volume electrolyte chamber to cause fuel and electrolyte to enter into the fuel cell.

113. The method of claim 111, further comprising controlling fluid flow between the fuel cell and cartridge with the first and second valves.

114. The method of claim 111, further comprising controlling fluid flow between the fuel cell and the cartridge with the first and second valves.

115. The method of claim 111, further comprising:

forcing fuel to enter into the at least one variable volume fuel chamber of the cartridge from the at least one variable volume fuel chamber of the fuel cell;

forcing electrolyte to enter into the at least one variable volume electrolyte chamber of the cartridge from the at least one electrolyte chamber of the fuel cell;

disconnecting the second valve from the first valve; and

preventing, with the second valve, spent fuel and electrolyte from exiting the cartridge.

116. A method of refilling a fuel cell with a removable cartridge, the method comprising:

connecting the cartridge and the fuel cell to each other; and

transferring at least one fuel component from the cartridge to the fuel cell.

117. The method of claim 116, further comprising:

transferring the at least one fuel component from the fuel cell to the cartridge; and

disconnecting the cartridge from the fuel cell.